



## SEQUENCE LISTING

<110> Zuker, Charles S.  
The Regents of the University of California

<120> Assays for Sensory Modulators Using a Sensory Cell  
Specific G-Protein Alpha Subunit

<130> 02307E-092610US

<140> US 09/492,028

<141> 2000-01-26

<150> US 60/117,367

<151> 1999-01-27

<160> 14

<170> PatentIn Ver. 2.1

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<210> 6

<211> 840

<212> PRT

<213> Rattus sp.

<220>

<223> rat G-protein coupled receptor B3 (GPCR-B3)

<400> 6

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Met Leu Phe Trp Ala Ala His Leu Leu Leu Ser Leu Gln Leu Val Tyr
  1                      5                      10                      15

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Cys Trp Ala Phe Ser Cys Gln Arg Thr Glu Ser Ser Pro Gly Phe Ser
                20                      25                      30

```

```

Leu Pro Gly Asp Phe Leu Leu Ala Gly Leu Phe Ser Leu His Gly Asp
    35                      40                      45

```

```

Cys Leu Gln Val Arg His Arg Pro Leu Val Thr Ser Cys Asp Arg Pro
    50                      55                      60

```

```

Asp Ser Phe Asn Gly His Gly Tyr His Leu Phe Gln Ala Met Arg Phe
    65                      70                      75                      80

```

```

Thr Val Glu Glu Ile Asn Asn Ser Ser Ala Leu Leu Pro Asn Ile Thr
                85                      90                      95

```

```

Leu Gly Tyr Glu Leu Tyr Asp Val Cys Ser Glu Ser Ala Asn Val Tyr
    100                      105                      110

```

```

Ala Thr Leu Arg Val Leu Ala Leu Gln Gly Pro Arg His Ile Glu Ile
    115                      120                      125

```

```

Gln Lys Asp Leu Arg Asn His Ser Ser Lys Val Val Ala Phe Ile Gly
    130                      135                      140

```

```

Pro Asp Asn Thr Asp His Ala Val Thr Thr Ala Ala Leu Leu Gly Pro
    145                      150                      155                      160

```

```

Phe Leu Met Pro Leu Val Ser Tyr Glu Ala Ser Ser Val Val Leu Ser
                165                      170                      175

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Ala Lys Arg Lys Phe Pro Ser Phe Leu Arg Thr Val Pro Ser Asp Arg
    180                      185                      190

```

His	Gln	Val	Glu	Val	Met	Val	Gln	Leu	Leu	Gln	Ser	Phe	Gly	Trp	Val	195	200	205
Trp	Ile	Ser	Leu	Ile	Gly	Ser	Tyr	Gly	Asp	Tyr	Gly	Gln	Leu	Gly	Val	210	215	220
Gln	Ala	Leu	Glu	Glu	Leu	Ala	Val	Pro	Arg	Gly	Ile	Cys	Val	Ala	Phe	225	230	235
Lys	Asp	Ile	Val	Pro	Phe	Ser	Ala	Arg	Val	Gly	Asp	Pro	Arg	Met	Gln	245	250	255
Ser	Met	Met	Gln	His	Leu	Ala	Gln	Ala	Arg	Thr	Thr	Val	Val	Val	Val	260	265	270
Phe	Ser	Asn	Arg	His	Leu	Ala	Arg	Val	Phe	Phe	Arg	Ser	Val	Val	Leu	275	280	285
Ala	Asn	Leu	Thr	Gly	Lys	Val	Trp	Val	Ala	Ser	Glu	Asp	Trp	Ala	Ile	290	295	300
Ser	Thr	Tyr	Ile	Thr	Ser	Val	Thr	Gly	Ile	Gln	Gly	Ile	Gly	Thr	Val	305	310	315
Leu	Gly	Val	Ala	Val	Gln	Gln	Arg	Gln	Val	Pro	Gly	Leu	Lys	Glu	Phe	325	330	335
Glu	Glu	Ser	Tyr	Val	Arg	Ala	Val	Thr	Ala	Ala	Pro	Ser	Ala	Cys	Pro	340	345	350
Glu	Gly	Ser	Trp	Cys	Ser	Thr	Asn	Gln	Leu	Cys	Arg	Glu	Cys	His	Thr	355	360	365
Phe	Thr	Thr	Arg	Asn	Met	Pro	Thr	Leu	Gly	Ala	Phe	Ser	Met	Ser	Ala	370	375	380
Ala	Tyr	Arg	Val	Tyr	Glu	Ala	Val	Tyr	Ala	Val	Ala	His	Gly	Leu	His	385	390	395
Gln	Leu	Leu	Gly	Cys	Thr	Ser	Glu	Ile	Cys	Ser	Arg	Gly	Pro	Val	Tyr	405	410	415
Pro	Trp	Gln	Leu	Leu	Gln	Gln	Ile	Tyr	Lys	Val	Asn	Phe	Leu	Leu	His	420	425	430
Glu	Asn	Thr	Val	Ala	Phe	Asp	Asp	Asn	Gly	Asp	Thr	Leu	Gly	Tyr	Tyr	435	440	445
Asp	Ile	Ile	Ala	Trp	Asp	Trp	Asn	Gly	Pro	Glu	Trp	Thr	Phe	Glu	Ile	450	455	460
Ile	Gly	Ser	Ala	Ser	Leu	Ser	Pro	Val	His	Leu	Asp	Ile	Asn	Lys	Thr	465	470	475
Lys	Ile	Gln	Trp	His	Gly	Lys	Asn	Asn	Gln	Val	Pro	Val	Ser	Val	Cys	485	490	495
Thr	Thr	Asp	Cys	Leu	Ala	Gly	His	His	Arg	Val	Val	Val	Gly	Ser	His	500	505	510



His	Cys	Cys	Phe	Glu	Cys	Val	Pro	Cys	Glu	Ala	Gly	Thr	Phe	Leu	Asn	515	520	525
Met	Ser	Glu	Leu	His	Ile	Cys	Gln	Pro	Cys	Gly	Thr	Glu	Glu	Trp	Ala	530	535	540
Pro	Lys	Glu	Ser	Thr	Thr	Cys	Phe	Pro	Arg	Thr	Val	Glu	Phe	Leu	Ala	545	550	555
Trp	His	Glu	Pro	Ile	Ser	Leu	Val	Leu	Ile	Ala	Ala	Asn	Thr	Leu	Leu	565	570	575
Leu	Leu	Leu	Leu	Val	Gly	Thr	Ala	Gly	Leu	Phe	Ala	Trp	His	Phe	His	580	585	590
Thr	Pro	Val	Val	Arg	Ser	Ala	Gly	Gly	Arg	Leu	Cys	Phe	Leu	Met	Leu	595	600	605
Gly	Ser	Leu	Val	Ala	Gly	Ser	Cys	Ser	Phe	Tyr	Ser	Phe	Phe	Gly	Glu	610	615	620
Pro	Thr	Val	Pro	Ala	Cys	Leu	Leu	Arg	Gln	Pro	Leu	Phe	Ser	Leu	Gly	625	630	635
Phe	Ala	Ile	Phe	Leu	Ser	Cys	Leu	Thr	Ile	Arg	Ser	Phe	Gln	Leu	Val	645	650	655
Ile	Ile	Phe	Lys	Phe	Ser	Thr	Lys	Val	Pro	Thr	Phe	Tyr	Arg	Thr	Trp	660	665	670
Ala	Gln	Asn	His	Gly	Ala	Gly	Leu	Phe	Val	Ile	Val	Ser	Ser	Thr	Val	675	680	685
His	Leu	Leu	Ile	Cys	Leu	Thr	Trp	Leu	Val	Met	Trp	Thr	Pro	Arg	Pro	690	695	700
Thr	Arg	Glu	Tyr	Gln	Arg	Phe	Pro	His	Leu	Val	Ile	Leu	Glu	Cys	Thr	705	710	715
Glu	Val	Asn	Ser	Val	Gly	Phe	Leu	Leu	Ala	Phe	Thr	His	Asn	Ile	Leu	725	730	735
Leu	Ser	Ile	Ser	Thr	Phe	Val	Cys	Ser	Tyr	Leu	Gly	Lys	Glu	Leu	Pro	740	745	750
Glu	Asn	Tyr	Asn	Glu	Ala	Lys	Cys	Val	Thr	Phe	Ser	Leu	Leu	Leu	Asn	755	760	765
Phe	Val	Ser	Trp	Ile	Ala	Phe	Phe	Thr	Met	Ala	Ser	Ile	Tyr	Gln	Gly	770	775	780
Ser	Tyr	Leu	Pro	Ala	Val	Asn	Val	Leu	Ala	Gly	Leu	Thr	Thr	Leu	Ser	785	790	795
Gly	Gly	Phe	Ser	Gly	Tyr	Phe	Leu	Pro	Lys	Cys	Tyr	Val	Ile	Leu	Cys	805	810	815

Arg Pro Glu Leu Asn Asn Thr Glu His Phe Gln Ala Ser Ile Gln Asp  
                   820                  825                  830

Tyr Thr Arg Arg Cys Gly Thr Thr  
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<210> 7

<211> 842

<212> PRT

<213> Mus sp.

<220>

<223> mouse G-protein coupled receptor B3 (GPCR-B3)

<400> 7

Met Leu Phe Trp Ala Ala His Leu Leu Leu Ser Leu Gln Leu Ala Val  
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Ala Tyr Cys Trp Ala Phe Ser Cys Gln Arg Thr Glu Ser Ser Pro Gly  
           20                  25                  30

Phe Ser Leu Pro Gly Asp Phe Leu Leu Ala Gly Leu Phe Ser Leu His  
           35                  40                  45

Ala Asp Cys Leu Gln Val Arg His Arg Pro Leu Val Thr Ser Cys Asp  
           50                  55                  60

Arg Ser Asp Ser Phe Asn Gly His Gly Tyr His Leu Phe Gln Ala Met  
   65                  70                  75                  80

Arg Phe Thr Val Glu Glu Ile Asn Asn Ser Thr Ala Leu Leu Pro Asn  
           85                  90                  95

Ile Thr Leu Gly Tyr Glu Leu Tyr Asp Val Cys Ser Glu Ser Ser Asn  
           100                  105                  110

Val Tyr Ala Thr Leu Arg Val Pro Ala Gln Gln Gly Thr Gly His Leu  
           115                  120                  125

Glu Met Gln Arg Asp Leu Arg Asn His Ser Ser Lys Val Val Ala Leu  
           130                  135                  140

Ile Gly Pro Asp Asn Thr Asp His Ala Val Thr Thr Ala Ala Leu Leu  
           145                  150                  155                  160

Ser Pro Phe Leu Met Pro Leu Val Ser Tyr Glu Ala Ser Ser Val Ile  
           165                  170                  175

Leu Ser Gly Lys Arg Lys Phe Pro Ser Phe Leu Arg Thr Ile Pro Ser  
           180                  185                  190

Asp Lys Tyr Gln Val Glu Val Ile Val Arg Leu Leu Gln Ser Phe Gly  
           195                  200                  205

Trp Val Trp Ile Ser Leu Val Gly Ser Tyr Gly Asp Tyr Gly Gln Leu  
           210                  215                  220

Gly Val Gln Ala Leu Glu Glu Leu Ala Thr Pro Arg Gly Ile Cys Val  
           225                  230                  235                  240

Ala	Phe	Lys	Asp	Val	Val	Pro	Leu	Ser	Ala	Gln	Ala	Gly	Asp	Pro	Arg	
				245					250					255		
Met	Gln	Arg	Met	Met	Leu	Arg	Leu	Ala	Arg	Ala	Arg	Thr	Thr	Val	Val	
			260					265					270			
Val	Val	Phe	Ser	Asn	Arg	His	Leu	Ala	Gly	Val	Phe	Phe	Arg	Ser	Val	
		275					280					285				
Val	Leu	Ala	Asn	Leu	Thr	Gly	Lys	Val	Trp	Ile	Ala	Ser	Glu	Asp	Trp	
	290					295					300					
Ala	Ile	Ser	Thr	Tyr	Ile	Thr	Asn	Val	Pro	Gly	Ile	Gln	Gly	Ile	Gly	
305					310					315					320	
Thr	Val	Leu	Gly	Val	Ala	Ile	Gln	Gln	Arg	Gln	Val	Pro	Gly	Leu	Lys	
				325					330					335		
Glu	Phe	Glu	Glu	Ser	Tyr	Val	Gln	Ala	Val	Met	Gly	Ala	Pro	Arg	Thr	
			340					345					350			
Cys	Pro	Glu	Gly	Ser	Trp	Cys	Gly	Thr	Asn	Gln	Leu	Cys	Arg	Glu	Cys	
		355					360					365				
His	Ala	Phe	Thr	Thr	Trp	Asn	Met	Pro	Glu	Leu	Gly	Ala	Phe	Ser	Met	
	370					375					380					
Ser	Ala	Ala	Tyr	Asn	Val	Tyr	Glu	Ala	Val	Tyr	Ala	Val	Ala	His	Gly	
385					390					395					400	
Leu	His	Gln	Leu	Leu	Gly	Cys	Thr	Ser	Gly	Thr	Cys	Ala	Arg	Gly	Pro	
			405						410					415		
Val	Tyr	Pro	Trp	Gln	Leu	Leu	Gln	Gln	Ile	Tyr	Lys	Val	Asn	Phe	Leu	
			420					425					430			
Leu	His	Lys	Lys	Thr	Val	Ala	Phe	Asp	Asp	Lys	Gly	Asp	Pro	Leu	Gly	
		435					440					445				
Tyr	Tyr	Asp	Ile	Ile	Ala	Trp	Asp	Trp	Asn	Gly	Pro	Glu	Trp	Thr	Phe	
	450					455					460					
Glu	Val	Ile	Gly	Ser	Ala	Ser	Leu	Ser	Pro	Val	His	Leu	Asp	Ile	Asn	
465					470					475					480	
Lys	Thr	Lys	Ile	Gln	Trp	His	Gly	Lys	Asn	Asn	Gln	Val	Pro	Val	Ser	
			485						490					495		
Val	Cys	Thr	Arg	Asp	Cys	Leu	Glu	Gly	His	His	Arg	Leu	Val	Met	Gly	
			500					505					510			
Ser	His	His	Cys	Cys	Phe	Glu	Cys	Met	Pro	Cys	Glu	Ala	Gly	Thr	Phe	
		515					520					525				
Leu	Asn	Thr	Ser	Glu	Leu	His	Thr	Cys	Gln	Pro	Cys	Gly	Thr	Glu	Glu	
	530					535					540					
Trp	Ala	Pro	Glu	Gly	Ser	Ser	Ala	Cys	Phe	Ser	Arg	Thr	Val	Glu	Phe	
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Leu	Gly	Trp	His	Glu 565	Pro	Ile	Ser	Leu	Val 570	Leu	Leu	Ala	Ala	Asn 575	Thr
Leu	Leu	Leu	Leu	Leu 580	Leu	Ile	Gly	Thr 585	Ala	Gly	Leu	Phe	Ala 590	Trp	Arg
Leu	His	Thr	Pro	Val 595	Val	Arg	Ser 600	Ala	Gly	Gly	Arg	Leu 605	Cys	Phe	Leu
Met	Leu	Gly	Ser	Leu 610	Val	Ala 615	Gly	Ser	Cys	Ser	Leu 620	Tyr	Ser	Phe	Phe
Gly 625	Lys	Pro	Thr	Val 630	Pro	Ala	Cys	Leu	Leu 635	Arg	Gln	Pro	Leu	Phe	Ser 640
Leu	Gly	Phe	Ala	Ile 645	Phe	Leu	Ser	Cys	Leu 650	Thr	Ile	Arg	Ser	Phe 655	Gln
Leu	Val	Ile	Ile 660	Phe	Lys	Phe	Ser	Thr 665	Lys	Val	Pro	Thr	Phe 670	Tyr	His
Thr	Trp	Ala 675	Gln	Asn	His	Gly	Ala 680	Gly	Ile	Phe	Val 685	Ile	Val	Ser	Ser
Thr	Val 690	His	Leu	Phe	Leu	Cys 695	Leu	Thr	Trp	Leu	Ala 700	Met	Trp	Thr	Pro
Arg 705	Pro	Thr	Arg	Glu	Tyr 710	Gln	Arg	Phe	Pro	His 715	Leu	Val	Ile	Leu	Glu 720
Cys	Thr	Glu	Val 725	Asn	Ser	Val	Gly	Phe	Leu 730	Val	Ala	Phe	Ala	His 735	Asn
Ile	Leu	Leu	Ser 740	Ile	Ser	Thr	Phe	Val 745	Cys	Ser	Tyr	Leu	Gly 750	Lys	Glu
Leu	Pro 755	Glu	Asn	Tyr	Asn	Glu	Ala 760	Lys	Cys	Val	Thr 765	Phe	Ser	Leu	Leu
Leu	His 770	Phe	Val	Ser	Trp	Ile 775	Ala	Phe	Phe	Thr 780	Met	Ser	Ser	Ile	Tyr
Gln 785	Gly	Ser	Tyr	Leu	Pro 790	Ala	Val	Asn	Val	Leu 795	Ala	Gly	Leu	Ala	Thr 800
Leu	Ser	Gly	Gly 805	Phe	Ser	Gly	Tyr	Phe	Leu 810	Pro	Lys	Cys	Tyr	Val 815	Ile
Leu	Cys	Arg	Pro 820	Glu	Leu	Asn	Asn	Thr 825	Glu	His	Phe	Gln	Ala 830	Ser	Ile
Gln	Asp 835	Tyr	Thr	Arg	Arg	Cys	Gly 840	Thr	Thr						

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<210> 8
<211> 777
<212> PRT
<213> Homo sapiens
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&lt;220&gt;

&lt;223&gt; human G-protein coupled receptor B3 (GPCR-B3)

&lt;400&gt; 8

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Arg	Leu	Gly	Val	Glu	Glu	Ile	Asn	Asn	Ser	Thr	Ala	Leu	Leu	Pro	Asn
			20				25						30		
Ile	Thr	Leu	Gly	Tyr	Gln	Leu	Tyr	Asp	Val	Cys	Ser	Asp	Ser	Ala	Asn
		35				40						45			
Val	Tyr	Ala	Thr	Leu	Arg	Val	Leu	Ser	Leu	Pro	Gly	Gln	His	His	Ile
	50				55						60				
Glu	Leu	Gln	Gly	Asp	Leu	Leu	His	Tyr	Ser	Pro	Thr	Val	Leu	Ala	Val
65					70				75						80
Ile	Gly	Pro	Asp	Ser	Thr	Asn	Arg	Ala	Ala	Thr	Thr	Ala	Ala	Leu	Leu
				85				90						95	
Ser	Pro	Phe	Leu	Val	His	Ile	Ser	Tyr	Ala	Ala	Ser	Ser	Glu	Thr	Leu
			100					105					110		
Ser	Val	Lys	Arg	Gln	Tyr	Pro	Ser	Phe	Leu	Arg	Thr	Ile	Pro	Asn	Asp
		115				120						125			
Lys	Tyr	Gln	Val	Glu	Thr	Met	Val	Leu	Leu	Leu	Gln	Lys	Phe	Gly	Trp
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Thr	Trp	Ile	Ser	Leu	Val	Gly	Ser	Ser	Asp	Asp	Tyr	Gly	Gln	Leu	Gly
145				150					155					160	
Val	Gln	Ala	Leu	Glu	Asn	Gln	Ala	Leu	Val	Arg	Gly	Ile	Cys	Ile	Ala
			165					170					175		
Phe	Lys	Asp	Ile	Met	Pro	Phe	Ser	Ala	Gln	Val	Gly	Asp	Glu	Arg	Met
			180					185					190		
Gln	Cys	Leu	Met	Arg	His	Leu	Ala	Gln	Ala	Gly	Ala	Thr	Val	Val	Val
		195				200						205			
Val	Phe	Ser	Ser	Arg	Gln	Leu	Ala	Arg	Val	Phe	Phe	Glu	Ser	Val	Val
	210				215						220				
Leu	Thr	Asn	Leu	Thr	Gly	Lys	Val	Trp	Val	Ala	Ser	Glu	Ala	Trp	Ala
225				230					235					240	
Leu	Ser	Arg	His	Ile	Thr	Gly	Val	Pro	Gly	Ile	Gln	Arg	Ile	Gly	Met
			245					250					255		
Val	Leu	Gly	Val	Ala	Ile	Gln	Lys	Arg	Ala	Val	Pro	Gly	Leu	Lys	Ala
		260				265						270			
Phe	Glu	Glu	Ala	Tyr	Ala	Arg	Ala	Asp	Lys	Glu	Ala	Pro	Arg	Pro	Cys
	275					280						285			
His	Lys	Gly	Ser	Trp	Cys	Ser	Ser	Asn	Gln	Leu	Cys	Arg	Glu	Cys	Gln
	290				295					300					

Ala	Phe	Met	Ala	His	Thr	Met	Pro	Lys	Leu	Lys	Ala	Phe	Ser	Met	Ser	305	310	315	320
Ser	Ala	Tyr	Asn	Ala	Tyr	Arg	Ala	Val	Tyr	Ala	Val	Ala	His	Gly	Leu	325	330		335
His	Gln	Leu	Leu	Gly	Cys	Ala	Ser	Glu	Leu	Cys	Ser	Arg	Gly	Arg	Val	340	345		350
Tyr	Pro	Trp	Gln	Leu	Leu	Glu	Gln	Ile	His	Lys	Val	His	Phe	Leu	Leu	355	360		365
His	Lys	Asp	Thr	Val	Ala	Phe	Asn	Asp	Asn	Arg	Asp	Pro	Leu	Ser	Ser	370	375		380
Tyr	Asn	Ile	Ile	Ala	Trp	Asp	Trp	Asn	Gly	Pro	Lys	Trp	Thr	Phe	Thr	385	390		400
Val	Leu	Gly	Ser	Ser	Thr	Trp	Ser	Pro	Val	Gln	Leu	Asn	Ile	Asn	Glu	405	410		415
Thr	Lys	Ile	Gln	Trp	His	Gly	Lys	Asn	His	Gln	Val	Pro	Lys	Ser	Val	420	425		430
Cys	Ser	Ser	Asp	Cys	Leu	Glu	Gly	His	Gln	Arg	Val	Val	Thr	Gly	Phe	435	440		445
His	His	Cys	Cys	Phe	Glu	Cys	Val	Pro	Cys	Gly	Ala	Gly	Thr	Phe	Leu	450	455		460
Asn	Lys	Ser	Glu	Leu	Tyr	Arg	Cys	Gln	Pro	Cys	Gly	Thr	Glu	Glu	Trp	465	470		480
Ala	Pro	Glu	Gly	Ser	Gln	Thr	Cys	Phe	Pro	Arg	Thr	Val	Val	Phe	Leu	485	490		495
Ala	Leu	Arg	Glu	His	Thr	Ser	Trp	Val	Leu	Leu	Ala	Ala	Asn	Thr	Leu	500	505		510
Leu	Leu	Leu	Leu	Leu	Leu	Gly	Thr	Ala	Gly	Leu	Phe	Ala	Trp	His	Leu	515	520		525
Asp	Thr	Pro	Val	Val	Arg	Ser	Ala	Gly	Gly	Arg	Leu	Cys	Phe	Leu	Met	530	535		540
Leu	Gly	Ser	Leu	Ala	Ala	Gly	Ser	Gly	Ser	Leu	Tyr	Gly	Phe	Phe	Gly	545	550		555
Glu	Pro	Thr	Arg	Pro	Ala	Cys	Leu	Leu	Arg	Gln	Ala	Leu	Phe	Ala	Leu	565	570		575
Gly	Phe	Thr	Ile	Phe	Leu	Ser	Cys	Leu	Thr	Val	Arg	Ser	Phe	Gln	Leu	580	585		590
Ile	Ile	Ile	Phe	Lys	Phe	Ser	Thr	Lys	Val	Pro	Thr	Phe	Tyr	His	Ala	595	600		605
Trp	Val	Gln	Asn	His	Gly	Ala	Gly	Leu	Phe	Val	Met	Ile	Ser	Ser	Ala	610	615		620

Ala Gln Leu Leu Ile Cys Leu Thr Trp Leu Val Val Trp Thr Pro Leu  
625 630 635 640

Pro Ala Arg Glu Tyr Gln Arg Phe Pro His Leu Val Met Leu Glu Cys  
645 650 655

Thr Glu Thr Asn Ser Leu Gly Phe Ile Leu Ala Phe Leu Tyr Asn Gly  
660 665 670

Leu Leu Ser Ile Ser Ala Phe Ala Cys Ser Tyr Leu Gly Lys Asp Leu  
675 680 685

Pro Glu Asn Tyr Asn Glu Ala Lys Cys Val Thr Phe Ser Leu Leu Phe  
690 695 700

Asn Phe Val Ser Trp Ile Ala Phe Phe Thr Thr Ala Ser Val Tyr Asp  
705 710 715 720

Gly Lys Tyr Leu Pro Ala Ala Asn Met Met Ala Gly Leu Ser Ser Leu  
725 730 735

Ser Ser Gly Phe Gly Gly Tyr Phe Leu Pro Lys Cys Tyr Val Ile Leu  
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Cys Arg Pro Asp Leu Asn Ser Thr Glu His Phe Gln Ala Ser Ile Gln  
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Asp Tyr Thr Arg Arg Cys Gly Ser Thr  
770 775

<210> 9

<211> 2993

<212> DNA

<213> Rattus sp.

<220>

<223> rat G-protein coupled receptor (GPCR) B4  
nucleotide sequence

<400> 9

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<210> 10  
 <211> 2532  
 <212> DNA  
 <213> Mus sp.

<220>  
 <223> mouse G-protein coupled receptor (GPCR) B4  
 nucleotide sequence

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gttattggcc	cagacaactc	tgagtctgcc	atcacctgtg	ccaacattct	ctcctacttc	480
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aagagttgcc agcctgggca aatgaaaaaa cccataggcc tccacccatg ctgcttcgag 1560
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<210> 11
<211> 2010
<212> DNA
<213> Homo sapiens

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<220>
<223> human G-protein coupled receptor (GPCR) B4
nucleotide sequence

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<400> 11
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<210> 12

<211> 843

<212> PRT

<213> Rattus sp.

<220>

<223> rat G-protein coupled receptor (GPCR) B4 amino  
acid sequence

<400> 12

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Met Gly Pro Gln Ala Arg Thr Leu Cys Leu Leu Ser Leu Leu Leu His
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```

```

Val Leu Pro Lys Pro Gly Lys Leu Val Glu Asn Ser Asp Phe His Leu
              20              25              30

```

```

Ala Gly Asp Tyr Leu Leu Gly Gly Leu Phe Thr Leu His Ala Asn Val
  35              40              45

```

```

Lys Ser Ile Ser His Leu Ser Tyr Leu Gln Val Pro Lys Cys Asn Glu
  50              55              60

```

```

Phe Thr Met Lys Val Leu Gly Tyr Asn Leu Met Gln Ala Met Arg Phe
  65              70              75              80

```

```

Ala Val Glu Glu Ile Asn Asn Cys Ser Ser Leu Leu Pro Gly Val Leu
              85              90              95

```

```

Leu Gly Tyr Glu Met Val Asp Val Cys Tyr Leu Ser Asn Asn Ile His
  100              105              110

```

```

Pro Gly Leu Tyr Phe Leu Ala Gln Asp Asp Asp Leu Leu Pro Ile Leu
  115              120              125

```

```

Lys Asp Tyr Ser Gln Tyr Met Pro His Val Val Ala Val Ile Gly Pro
  130              135              140

```

```

Asp Asn Ser Glu Ser Ala Ile Thr Val Ser Asn Ile Leu Ser His Phe
  145              150              155              160

```

```

Leu Ile Pro Gln Ile Thr Tyr Ser Ala Ile Ser Asp Lys Leu Arg Asp
  165              170              175

```

```

Lys Arg His Phe Pro Ser Met Leu Arg Thr Val Pro Ser Ala Thr His
  180              185              190

```

```

His Ile Glu Ala Met Val Gln Leu Met Val His Phe Gln Trp Asn Trp
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```

```

Ile Val Val Leu Val Ser Asp Asp Asp Tyr Gly Arg Glu Asn Ser His
  210              215              220

```

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Gln	Glu	Val	Leu	Pro	Ile	Pro	Glu	Ser	Ser	Gln	Val	Met	Arg	Ser	Glu	245	250	255	
Glu	Gln	Arg	Gln	Leu	Asp	Asn	Ile	Leu	Asp	Lys	Leu	Arg	Arg	Thr	Ser	260	265	270	
Ala	Arg	Val	Val	Val	Val	Phe	Ser	Pro	Glu	Leu	Ser	Leu	Tyr	Ser	Phe	275	280	285	
Phe	His	Glu	Val	Leu	Arg	Trp	Asn	Phe	Thr	Gly	Phe	Val	Trp	Ile	Ala	290	295	300	
Ser	Glu	Ser	Trp	Ala	Ile	Asp	Pro	Val	Leu	His	Asn	Leu	Thr	Glu	Leu	305	310	315	320
Arg	His	Thr	Gly	Thr	Phe	Leu	Gly	Val	Thr	Ile	Gln	Arg	Val	Ser	Ile	325	330	335	
Pro	Gly	Phe	Ser	Gln	Phe	Arg	Val	Arg	Arg	Asp	Lys	Pro	Gly	Tyr	Pro	340	345	350	
Val	Pro	Asn	Thr	Thr	Asn	Leu	Arg	Thr	Thr	Cys	Asn	Gln	Asp	Cys	Asp	355	360	365	
Ala	Cys	Leu	Asn	Thr	Thr	Lys	Ser	Phe	Asn	Asn	Ile	Leu	Ile	Leu	Ser	370	375	380	
Gly	Glu	Arg	Val	Val	Tyr	Ser	Val	Tyr	Ser	Ala	Val	Tyr	Ala	Val	Ala	385	390	395	400
His	Ala	Leu	His	Arg	Leu	Leu	Gly	Cys	Asn	Arg	Val	Arg	Cys	Thr	Lys	405	410	415	
Gln	Lys	Val	Tyr	Pro	Trp	Gln	Leu	Leu	Arg	Glu	Ile	Trp	His	Val	Asn	420	425	430	
Phe	Thr	Leu	Leu	Gly	Asn	Arg	Leu	Phe	Phe	Asp	Gln	Gln	Gly	Asp	Met	435	440	445	
Pro	Met	Leu	Leu	Asp	Ile	Ile	Gln	Trp	Gln	Trp	Asp	Leu	Ser	Gln	Asn	450	455	460	
Pro	Phe	Gln	Ser	Ile	Ala	Ser	Tyr	Ser	Pro	Thr	Ser	Lys	Arg	Leu	Thr	465	470	475	480
Tyr	Ile	Asn	Asn	Val	Ser	Trp	Tyr	Thr	Pro	Asn	Asn	Thr	Val	Pro	Val	485	490	495	
Ser	Met	Cys	Ser	Lys	Ser	Cys	Gln	Pro	Gly	Gln	Met	Lys	Lys	Ser	Val	500	505	510	
Gly	Leu	His	Pro	Cys	Cys	Phe	Glu	Cys	Leu	Asp	Cys	Met	Pro	Gly	Thr	515	520	525	
Tyr	Leu	Asn	Arg	Ser	Ala	Asp	Glu	Phe	Asn	Cys	Leu	Ser	Cys	Pro	Gly	530	535	540	

Ser 545	Met	Trp	Ser	Tyr	Lys 550	Asn	Asp	Ile	Thr	Cys 555	Phe	Gln	Arg	Arg	Pro 560
Thr	Phe	Leu	Glu	Trp 565	His	Glu	Val	Pro	Thr 570	Ile	Val	Val	Ala	Ile 575	Leu
Ala	Ala	Leu	Gly 580	Phe	Phe	Ser	Thr	Leu 585	Ala	Ile	Leu	Phe	Ile 590	Phe	Trp
Arg	His	Phe 595	Gln	Thr	Pro	Met	Val 600	Arg	Ser	Ala	Gly	Gly 605	Pro	Met	Cys
Phe	Leu 610	Met	Leu	Val	Pro	Leu 615	Leu	Leu	Ala	Phe	Gly 620	Met	Val	Pro	Val
Tyr 625	Val	Gly	Pro	Pro	Thr 630	Val	Phe	Ser	Cys	Phe 635	Cys	Arg	Gln	Ala	Phe 640
Phe	Thr	Val	Cys 645	Phe	Ser	Ile	Cys	Leu 650	Ser	Cys	Ile	Thr	Val	Arg 655	Ser
Phe	Gln	Ile 660	Val	Cys	Val	Phe	Lys	Met 665	Ala	Arg	Arg	Leu	Pro 670	Ser	Ala
Tyr	Ser	Phe 675	Trp	Met	Arg	Tyr	His 680	Gly	Pro	Tyr	Val	Phe 685	Val	Ala	Phe
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Thr 705	Ile	Asn	Pro	Ile	Gly 710	Arg	Thr	Asp	Pro	Asp 715	Asp	Pro	Asn	Ile	Met 720
Ile	Leu	Ser	Cys 725	His	Pro	Asn	Tyr	Arg	Asn 730	Gly	Leu	Leu	Phe	Asn 735	Thr
Ser	Met	Asp 740	Leu	Leu	Leu	Ser	Val	Leu 745	Gly	Phe	Ser	Phe	Ala 750	Tyr	Met
Gly	Lys	Glu 755	Leu	Pro	Thr	Asn	Tyr 760	Asn	Glu	Ala	Lys	Phe 765	Ile	Thr	Leu
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Ser 785	Val	His	Asp	Gly	Val 790	Leu	Val	Thr	Ile	Met 795	Asp	Leu	Leu	Val	Thr 800
Val	Leu	Asn	Phe 805	Leu	Ala	Ile	Gly	Leu	Gly 810	Tyr	Phe	Gly	Pro	Lys 815	Cys
Tyr	Met	Ile 820	Leu	Phe	Tyr	Pro	Glu	Arg 825	Asn	Thr	Ser	Ala	Tyr 830	Phe	Asn
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<210> 13  
 <211> 843  
 <212> PRT  
 <213> Mus sp.

<220>

<223> mouse G-protein coupled receptor (GPCR) B4 amino  
 acid sequence

<400> 13

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			20					25					30		
Ala	Gly	Asp	Tyr	Leu	Leu	Gly	Gly	Leu	Phe	Thr	Leu	His	Ala	Asn	Val
		35					40					45			
Lys	Ser	Val	Ser	His	Leu	Ser	Tyr	Leu	Gln	Val	Pro	Lys	Cys	Asn	Glu
	50					55					60				
Tyr	Asn	Met	Lys	Val	Leu	Gly	Tyr	Asn	Leu	Met	Gln	Ala	Met	Arg	Phe
65					70					75					80
Ala	Val	Glu	Glu	Ile	Asn	Asn	Cys	Ser	Ser	Leu	Leu	Pro	Gly	Val	Leu
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Leu	Gly	Tyr	Glu	Met	Val	Asp	Val	Cys	Tyr	Leu	Ser	Asn	Asn	Ile	Gln
			100					105					110		
Pro	Gly	Leu	Tyr	Phe	Leu	Ser	Gln	Ile	Asp	Asp	Phe	Leu	Pro	Ile	Leu
		115					120					125			
Lys	Asp	Tyr	Ser	Gln	Tyr	Arg	Pro	Gln	Val	Val	Ala	Val	Ile	Gly	Pro
	130					135					140				
Asp	Asn	Ser	Glu	Ser	Ala	Ile	Thr	Val	Ser	Asn	Ile	Leu	Ser	Tyr	Phe
145					150					155					160
Leu	Val	Pro	Gln	Val	Thr	Tyr	Ser	Ala	Ile	Thr	Asp	Lys	Leu	Gln	Asp
			165						170					175	
Lys	Arg	Arg	Phe	Pro	Ala	Met	Leu	Arg	Thr	Val	Pro	Ser	Ala	Thr	His
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		195					200					205			
Ile	Val	Val	Leu	Val	Ser	Asp	Asp	Asp	Tyr	Gly	Arg	Glu	Asn	Ser	His
	210					215					220				
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225					230					235					240
Gln	Glu	Val	Leu	Pro	Val	Pro	Glu	Pro	Asn	Gln	Ala	Val	Arg	Pro	Glu
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Glu	Gln	Asp	Gln	Leu	Asp	Asn	Ile	Leu	Asp	Lys	Leu	Arg	Arg	Thr	Ser
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Ala	Arg	Val	Val	Val	Ile	Phe	Ser	Pro	Glu	Leu	Ser	Leu	His	Asn	Phe		
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Phe	Arg	Glu	Val	Leu	Arg	Trp	Asn	Phe	Thr	Gly	Phe	Val	Trp	Ile	Ala		
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Gly	Glu	Arg	Val	Val	Tyr	Ser	Val	Tyr	Ser	Ala	Val	Tyr	Ala	Val	Ala		
385					390					395					400		
His	Thr	Leu	His	Arg	Leu	Leu	His	Cys	Asn	Gln	Val	Arg	Cys	Thr	Lys		
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Gln	Ile	Val	Tyr	Pro	Trp	Gln	Leu	Leu	Arg	Glu	Ile	Trp	His	Val	Asn		
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Phe	Thr	Leu	Leu	Gly	Asn	Gln	Leu	Phe	Phe	Asp	Glu	Gln	Gly	Asp	Met		
		435					440					445					
Pro	Met	Leu	Leu	Asp	Ile	Ile	Gln	Trp	Gln	Trp	Gly	Leu	Ser	Gln	Asn		
	450					455					460						
Pro	Phe	Gln	Ser	Ile	Ala	Ser	Tyr	Ser	Pro	Thr	Glu	Thr	Arg	Leu	Thr		
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Tyr	Ile	Ser	Asn	Val	Ser	Trp	Tyr	Thr	Pro	Asn	Asn	Thr	Val	Pro	Ile		
			485						490					495			
Ser	Met	Cys	Ser	Lys	Ser	Cys	Gln	Pro	Gly	Gln	Met	Lys	Lys	Pro	Ile		
		500						505				510					
Gly	Leu	His	Pro	Cys	Cys	Phe	Glu	Cys	Val	Asp	Cys	Pro	Pro	Asp	Thr		
		515					520					525					
Tyr	Leu	Asn	Arg	Ser	Val	Asp	Glu	Phe	Asn	Cys	Leu	Ser	Cys	Pro	Gly		
	530					535					540						
Ser	Met	Trp	Ser	Tyr	Lys	Asn	Asn	Ile	Ala	Cys	Phe	Lys	Arg	Arg	Leu		
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Ala	Phe	Leu	Glu	Trp	His	Glu	Val	Pro	Thr	Ile	Val	Val	Thr	Ile	Leu		
				565					570					575			
Ala	Ala	Leu	Gly	Phe	Ile	Ser	Thr	Leu	Ala	Ile	Leu	Leu	Ile	Phe	Trp		
		580						585					590				

Arg His Phe Gln Thr Pro Met Val Arg Ser Ala Gly Gly Pro Met Cys  
 595 600 605  
 Phe Leu Met Leu Val Pro Leu Leu Leu Ala Phe Gly Met Val Pro Val  
 610 615 620  
 Tyr Val Gly Pro Pro Thr Val Phe Ser Cys Phe Cys Arg Gln Ala Phe  
 625 630 635 640  
 Phe Thr Val Cys Phe Ser Val Cys Leu Ser Cys Ile Thr Val Arg Ser  
 645 650 655  
 Phe Gln Ile Val Cys Val Phe Lys Met Ala Arg Arg Leu Pro Ser Ala  
 660 665 670  
 Tyr Gly Phe Trp Met Arg Tyr His Gly Pro Tyr Val Phe Val Ala Phe  
 675 680 685  
 Ile Thr Ala Val Lys Val Ala Leu Val Ala Gly Asn Met Leu Ala Thr  
 690 695 700  
 Thr Ile Asn Pro Ile Gly Arg Thr Asp Pro Asp Asp Pro Asn Ile Ile  
 705 710 715 720  
 Ile Leu Ser Cys His Pro Asn Tyr Arg Asn Gly Leu Leu Phe Asn Thr  
 725 730 735  
 Ser Met Asp Leu Leu Leu Ser Val Leu Gly Phe Ser Phe Ala Tyr Val  
 740 745 750  
 Gly Lys Glu Leu Pro Thr Asn Tyr Asn Glu Ala Lys Phe Ile Thr Leu  
 755 760 765  
 Ser Met Thr Phe Ser Phe Thr Ser Ser Ile Ser Leu Cys Thr Phe Met  
 770 775 780  
 Ser Val His Asp Gly Val Leu Val Thr Ile Met Asp Leu Leu Val Thr  
 785 790 795 800  
 Val Leu Asn Phe Leu Ala Ile Gly Leu Gly Tyr Phe Gly Pro Lys Cys  
 805 810 815  
 Tyr Met Ile Leu Phe Tyr Pro Glu Arg Asn Thr Ser Ala Tyr Phe Asn  
 820 825 830  
 Ser Met Ile Gln Gly Tyr Thr Met Arg Lys Ser  
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<211> 669

<212> PRT

<213> Homo sapiens

<220>

<223> human G-protein coupled receptor (GPCR) B4 amino acid sequence

<400> 14

Ile Thr Tyr Ser Ala Ile Ser Asp Glu Leu Arg Asp Lys Val Arg Phe  
 1 5 10 15

Pro	Ala	Leu	Leu	Arg	Thr	Thr	Pro	Ser	Ala	Asp	His	His	Val	Glu	Ala	20	25	30	
Met	Val	Gln	Leu	Met	Leu	His	Phe	Arg	Trp	Asn	Trp	Ile	Ile	Val	Leu	35	40	45	
Val	Ser	Ser	Asp	Thr	Tyr	Gly	Arg	Asp	Asn	Gly	Gln	Leu	Leu	Gly	Glu	50	55	60	
Arg	Val	Ala	Arg	Arg	Asp	Ile	Cys	Ile	Ala	Phe	Gln	Glu	Thr	Leu	Pro	65	70	75	80
Thr	Leu	Gln	Pro	Asn	Gln	Asn	Met	Thr	Ser	Glu	Glu	Arg	Gln	Arg	Leu	85	90	95	
Val	Thr	Ile	Val	Asp	Lys	Leu	Gln	Gln	Ser	Thr	Ala	Arg	Val	Val	Val	100	105	110	
Val	Phe	Ser	Pro	Asp	Leu	Thr	Leu	Tyr	His	Phe	Phe	Asn	Glu	Val	Leu	115	120	125	
Arg	Gln	Asn	Phe	Thr	Gly	Ala	Val	Trp	Ile	Ala	Ser	Glu	Ser	Trp	Ala	130	135	140	
Ile	Asp	Pro	Val	Leu	His	Asn	Leu	Thr	Glu	Leu	Gly	His	Leu	Gly	Thr	145	150	155	160
Phe	Leu	Gly	Ile	Thr	Ile	Gln	Ser	Val	Pro	Ile	Pro	Gly	Phe	Ser	Glu	165	170	175	
Phe	Arg	Glu	Trp	Gly	Pro	Gln	Ala	Gly	Pro	Pro	Pro	Leu	Ser	Arg	Thr	180	185	190	
Ser	Gln	Ser	Tyr	Thr	Cys	Asn	Gln	Glu	Cys	Asp	Asn	Cys	Leu	Asn	Ala	195	200	205	
Thr	Leu	Ser	Phe	Asn	Thr	Ile	Leu	Arg	Leu	Ser	Gly	Glu	Arg	Val	Val	210	215	220	
Tyr	Ser	Val	Tyr	Ser	Ala	Val	Tyr	Ala	Val	Ala	His	Ala	Leu	His	Ser	225	230	235	240
Leu	Leu	Gly	Cys	Asp	Lys	Ser	Thr	Cys	Thr	Lys	Arg	Val	Val	Tyr	Pro	245	250	255	
Trp	Gln	Leu	Leu	Glu	Glu	Ile	Trp	Lys	Val	Asn	Phe	Thr	Leu	Leu	Asp	260	265	270	
His	Gln	Ile	Phe	Phe	Asp	Pro	Gln	Gly	Asp	Val	Ala	Leu	His	Leu	Glu	275	280	285	
Ile	Val	Gln	Trp	Gln	Trp	Asp	Arg	Ser	Gln	Asn	Pro	Phe	Gln	Ser	Val	290	295	300	
Ala	Ser	Tyr	Tyr	Pro	Leu	Gln	Arg	Gln	Leu	Lys	Asn	Ile	Lys	Thr	Ser	305	310	315	320
Leu	His	Thr	Val	Asn	Asn	Thr	Ile	Pro	Met	Ser	Met	Cys	Ser	Lys	Arg	325	330	335	



Cys	Gln	Ser	Gly	Gln	Lys	Lys	Lys	Pro	Val	Gly	Ile	His	Val	Cys	Cys	
			340					345					350			
Phe	Glu	Cys	Ile	Asp	Cys	Leu	Pro	Gly	Thr	Phe	Leu	Asn	His	Thr	Glu	
		355					360					365				
Cys	Pro	Asn	Asn	Glu	Trp	Ser	Tyr	Gln	Ser	Glu	Thr	Ser	Cys	Phe	Lys	
	370					375					380					
Arg	Gln	Leu	Val	Phe	Leu	Glu	Trp	His	Glu	Ala	Pro	Thr	Ile	Ala	Val	
385					390					395					400	
Ala	Leu	Leu	Ala	Ala	Leu	Gly	Phe	Leu	Ser	Thr	Leu	Ala	Ile	Leu	Val	
				405					410					415		
Ile	Phe	Trp	Arg	His	Phe	Gln	Thr	Pro	Ile	Val	Arg	Ser	Ala	Gly	Gly	
			420					425					430			
Pro	Met	Cys	Phe	Leu	Met	Leu	Thr	Leu	Leu	Leu	Val	Ala	Tyr	Met	Val	
		435					440					445				
Val	Pro	Val	Tyr	Val	Gly	Pro	Pro	Lys	Val	Ser	Thr	Cys	Leu	Cys	Arg	
	450					455					460					
Gln	Ala	Leu	Phe	Pro	Leu	Cys	Phe	Thr	Ile	Cys	Ile	Ser	Cys	Ile	Ala	
465					470					475					480	
Val	Arg	Ser	Phe	Gln	Ile	Val	Cys	Ala	Phe	Lys	Met	Ala	Ser	Arg	Phe	
				485					490					495		
Pro	Arg	Ala	Tyr	Ser	Tyr	Trp	Val	Arg	Tyr	Gln	Gly	Pro	Tyr	Val	Ser	
			500					505					510			
Met	Ala	Phe	Ile	Thr	Val	Leu	Lys	Met	Val	Ile	Val	Val	Ile	Gly	Met	
		515					520					525				
Leu	Ala	Arg	Pro	Gln	Ser	His	Pro	Arg	Thr	Asp	Pro	Asp	Asp	Pro	Lys	
	530					535					540					
Ile	Thr	Ile	Val	Ser	Cys	Asn	Pro	Asn	Tyr	Arg	Asn	Ser	Leu	Leu	Phe	
545					550					555					560	
Asn	Thr	Ser	Leu	Asp	Leu	Leu	Leu	Ser	Val	Val	Gly	Phe	Ser	Phe	Ala	
				565					570					575		
Tyr	Met	Gly	Lys	Glu	Leu	Pro	Thr	Asn	Tyr	Asn	Glu	Ala	Lys	Phe	Ile	
			580					585					590			
Thr	Leu	Ser	Met	Thr	Phe	Tyr	Phe	Thr	Ser	Ser	Val	Ser	Leu	Cys	Thr	
			595				600					605				
Phe	Met	Ser	Ala	Tyr	Ser	Gly	Val	Leu	Val	Thr	Ile	Val	Asp	Leu	Leu	
	610					615					620					
Val	Thr	Val	Leu	Asn	Leu	Leu	Ala	Ile	Ser	Leu	Gly	Tyr	Phe	Gly	Pro	
625					630					635					640	

Lys	Cys	Tyr	Met	Ile	Leu	Phe	Tyr	Pro	Glu	Arg	Asn	Thr	Pro	Ala	Tyr
				645					650					655	
Phe	Asn	Ser	Met	Ile	Gln	Gly	Tyr	Thr	Met	Arg	Arg	Asp			
			660					665							